

What I claim is:

Claims

Claim 1. A thin-film magnetic head having an MR head portion containing magnetoresistive elements, wherein a protective film having the composition represented by the following formula:



(where $a = 0 \cdot 0.7$, $b = 0 \cdot 1$, $c = 0 \cdot 1$, $d = 0 \cdot 1$, $e = 0 \cdot 1$ and $f = 0 \cdot 1$, in terms of atomic ratio), and having a thickness of 40 Å or less, is formed on at least the surface of said MR head portion facing a recording medium.

Claim 2. The magnetic head according to Claim 1, wherein the thickness of said protective film is 10 · 30 Å.

Claim 3. The magnetic head according to Claim 1 or 2, wherein $a = 0.05 \cdot 0.7$.

Claim 4. A method for producing a thin-film magnetic head, wherein vapor deposition is conducted on at least the surface of said thin-film magnetic head facing a recording medium until a film having a thickness of 40 Å or less is formed, by using material gas that is adjusted so as to form a diamond-like protective film having the composition represented by the following formula:



(where $a = 0 \cdot 0.7$, $b = 0 \cdot 1$, $c = 0 \cdot 1$, $d = 0 \cdot 1$, $e = 0 \cdot 1$ and $f = 0 \cdot 1$).

Claim 5. The method according to Claim 4, wherein vapor-phase etching is conducted prior to the formation of the diamond-like protective film on the surface of the thin-film magnetic head.

Claim 6. The method according to Claim 4 or 5, wherein vapor deposition is conducted by applying a negative bias voltage to the thin-film magnetic head.

Claim 7. The method according to any one of Claims 4 to 6, wherein the thickness of said protective film is 10 · 30 Å.

Claim 8. The method according to any one of Claims 4 to 7, wherein $a = 0.05 \cdot 0.7$.

Claim 9. A magnetic disk device having at least one slider equipped with the thin-film magnetic head according to Claim 1.